

REMARKS

Claims 1-40 remain in this application. No claims have been amended or cancelled. Reconsideration of the present application and allowance of the pending claims are respectfully requested in view of the following remarks.

The Office Action has rejected claims 1-7 and 9-40 under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,709,746 issued to Wood *et al.* The *Wood* patent is cited as disclosing methods for “reducing concentrations of organic materials with substituted cyclodextrin compound in polyester packaging materials” (Office Action page 2). In particular, the Office Action summarizes that the *Wood* patent teaches (i) various catalysts which are suitable for the transesterification step, (ii) extractable materials which can comprise reaction byproduct materials including formaldehyde, formic acid, acetaldehyde, acetic acid, etc., (iii) condensation/polymerization reaction between dicarboxylic acid, or a dimethyl ester thereof and the glycol material in heat driven metal catalyzed reaction, and (iv) coordination of cyclodextrin with metallic catalysts. The rejection based on the *Wood* patent is respectfully traversed in view of the following remarks.

A rejection under §102 is only proper when the claimed subject matter, in this case a method, is identically described or disclosed in the prior art. *In re Arkley*, 455 F.2d 586, 587 (CCPA 1972); *see also* M.P.E.P. §706.02(a) (“For anticipation under 35 U.S.C. §102, the reference must teach every aspect of the claimed invention either explicitly or impliedly.”). The *Wood* patent does not teach each and every single element of the presently claimed invention.

The presently claimed invention is directed to a method of reducing the amount of acetaldehyde in a melt-processed polyester having vinyl ester end groups, the method comprises incorporating into the polyester at least one active vinyl ester transesterification catalyst for catalyzing the conversion of the vinyl ester end groups to acetaldehyde, heating the polyester, and providing egress for the acetaldehyde from the polyester. In particular, Applicants’ invention is directed a method for incorporating at least one active vinyl ester transesterification catalyst into a polyester. Applicants specifically define “vinyl ester transesterification catalyst” as “a transesterification catalyst that induces conversion of vinyl ester end groups into acetaldehyde without also inducing formation of vinyl esters.” (Specification page 6, line 30 - page 7, line 2). Applicants have specifically stated that “metal ions that are not preferred include

zinc, gallium, antimony, aluminum, and other known transesterification and polymerization catalysts. These catalysts are not preferred because they are either ineffective for the conversion of vinyl esters into acetaldehyde, they are active for promoting the formation of vinyl esters by cleavage of ethylene linkages, or both. Surprisingly, the metal ions most preferred for conversion of vinyl esters to acetaldehyde are regarded as the least effective transesterification catalysts for polyester production, and their use therefore has been extremely limited or non-existent. Moreover, in polyester production, phosphate ion is added prior to the polymerization reaction, in order to neutralize any transesterification catalysts (other than germanium, titanium, or antimony). Consequently, in prior art polymer syntheses, the very catalysts that would be most effective for promoting the conversion of vinyl esters to acetaldehyde without the concomitant generation of vinyl esters have been either absent or neutralized.” (Specification page 7, lines 6-19).

The *Wood* patent does not teach vinyl ester transesterification catalysts as defined by Applicants, but rather discloses metallic catalysts used to promote polymerization reaction between diacid material and the dihydroxy compound, which are well known catalysts in the art. (Col. 1, lines 60-62). Applicants have stated that “the polymerization catalyst is not critical, so long as it is not exceptionally active for the formation of vinyl ester end groups.” (Specification, page 9, lines 6-7). Applicants’ presently claimed invention incorporates the vinyl ester transesterification catalyst into a polyester which may already contain a polymerization catalyst used in forming the polyester (i.e. promotion of the ester linkages in polyester). Applicants note that suitable polymerization catalysts include antimony, titanium, germanium, and tin compounds (Specification, page 9, line 8) and are widely known in the art, but are not effective as a vinyl ester transesterification catalyst as stated above. Applicants’ vinyl ester transesterification catalyst is added to the polyester in addition to any polyester forming catalyst that may have been used to initially form the polyester. The *Wood* reference does not teach addition of a vinyl ester transesterification catalyst.

The *Wood* patent further teaches the use of cyclodextrin to complex with polymerization/metal catalyst residues to prevent the production of catalytically generated reactive organic compound such as acetaldehyde. (Col. 5, lines 54-59). On the other hand, Applicants’ presently claimed invention, which does not include cyclodextrin, is “based on the discoveries that 1) in polyester melts, most of the contained acetaldehyde is actually present as

vinyl ester end groups, and to a lesser extent as methyl dioxolane, and that the actual amount of free acetaldehyde present in the polyester melt at any time is less than about 10% of the total; 2) certain catalysts can be added to polyester melts that will rapidly convert the contained vinyl ester end groups into free acetaldehyde and methyl dioxolane; and 3) contrary to the prior art teachings, acetaldehyde and methyl dioxolane can be removed from polyester melts extremely easily, using the simplest of venting operations.” (Specification, page 5, lines 7-15). Therefore, the presently claimed invention promotes the catalytic conversion of vinyl ester end groups into free acetaldehyde instead of its inhibition as taught by the *Wood* patent. Thus, *Wood* patent has failed to teach each and every single element of the presently claimed invention.

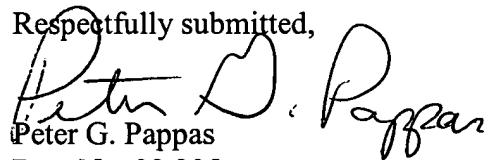
Not only does the *Wood* reference fails to anticipate the presently claimed invention, it also does not render the presently claimed invention obvious. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See M.P.E.P. §2143. Furthermore, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must be both found in the prior art, not in Applicants’ disclosure. See *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Importantly this evidence of teaching, suggestion, or motivation to combine must be “clear and particular.” *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999).

In the present case, the *Wood* reference neither suggests nor motivates one of ordinary skilled in the art to arrive at the presently claimed invention. In particular, the *Wood* reference, as stated above, teaches the use of cyclodextrin which complexes and associates with metallic catalysts to prevent the production of acetaldehyde. (See abstract; col. 5 lines 54-59; col. 14, lines 36-40; col. 18, lines 12-30; col. 19, lines 36-41). On the other hand, Applicants’ presently claimed invention promotes the formation of acetaldehyde by adding vinyl ester transesterification catalyst into a polyester which may already contain a polymerization catalyst. Thus, because of the different results, one of ordinary skilled in the art would not have been suggested or motivated to modify the teachings of the *Wood* reference to arrive at the presently claimed invention. Even if there were some remote motivation or suggestion to modify the

Wood reference, there would have been no reasonable expectation of success. Applicants have discovered that in polyester melts, most of the contained acetaldehyde is actually present as vinyl ester end groups, and to a lesser extent as methyl dioxolane, which can be converted to acetaldehyde and removed. Therefore, using any compound or compounds which inhibits the production of acetaldehyde, as taught by the *Wood* reference, would render the present invention useless. Because the *Wood* reference neither anticipates nor renders the presently claimed invention obvious, Applicants respectfully request withdrawal of this rejection.

In view of the present response to Office Action, Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,


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